

## CLAIMS

1. A gas fuel supply system for supplying gas fuel to an internal combustion engine, comprising:
  - an injector provided in an intake pipe of the internal combustion engine;
  - a fuel supply passage for supplying the gas fuel to the injector; and
  - means for controlling pressure of the gas fuel supplied to the injector through the fuel supply passage by using negative pressure in the intake pipe such that the pressure of the gas fuel increases if the negative pressure in the intake pipe decreases, and the pressure of the gas fuel decreases if the negative pressure in the intake pipe increases.
2. The gas fuel supply system as defined in claim 1, wherein the means for controlling pressure of the gas fuel comprises a diaphragm type regulator provided in the fuel supply passage, and a negative pressure supplying passage which connects a diaphragm chamber of the regulator to the intake pipe.
3. The gas fuel supply system as defined in claim 2, wherein a throttle valve is provided in the intake pipe for adjusting an amount of intake air, and the negative pressure supplying passage connects the diaphragm chamber to a downstream side of the throttle valve in the intake pipe.
4. The gas fuel supply system as defined in claim 2 or 3, wherein the regulator is a two stage type regulator comprising a high-pressure regulator and a low-pressure regulator, and the negative pressure supplying passage connects respective diaphragm chambers of the high-pressure regulator and the low-pressure regulator to the intake pipe.

5. A gas fuel supply system comprising:

- a regulator for decompressing gas fuel and supplying the decompressed gas fuel to an injector provided in an intake pipe of an internal combustion engine;
- and
- a throttle valve provided in an upstream side of the injector in the intake pipe,

wherein the regulator comprises:

- a valve element for opening and closing a passing hole for the gas fuel;
- a diaphragm to which the valve element is connected;
- a decompression chamber defined in a front side of the diaphragm for receiving the gas fuel which passes the passing hole;
- a diaphragm chamber defined in a back side of the diaphragm;
- and
- an adjustment spring for urging the diaphragm in such a direction that the valve element opens the passing hole,

wherein pressure in the diaphragm chamber acts to move the valve element in an opening direction, and pressure of the decompression chamber acts to move the valve element in a closing direction,

wherein the diaphragm chamber of the regulator is connected to a downstream side of the throttle valve in the intake pipe.